

Appln No.: 10/724,369
Amendment Dated: June 8, 2009
Reply to Office Action of April 15, 2009

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-17. (canceled)

18. (new) An orthopedic system for creation of a cavity within cancellous bone, said system comprising a cannula having an interior lumen, a transducer, and an electrical power source, wherein

(a) the transducer comprises an electroactive polymer sandwiched between a pair of electrodes, said electrodes being connected to the electrical power source;

(b) the electroactive polymer exists in a first state having a first size and a first shape when no power is applied by the power source to the electrodes, said first size and shape allowing passage of the transducer in the first state through the interior lumen of the cannula; and

(c) the electroactive polymer changes to a second state when power from the electrical power source is applied to the electroactive polymer, said second state having a second size and a second shape, wherein at least one of the second size and second shape are different from the first size and first shape in at least one dimension, whereby when the transducer is disposed in cancellous bone when power is applied the cancellous bone is compressed to form a cavity in the cancellous bone.

19. (new) The system of claim 18, wherein the cannula has an aperture formed therein connecting the interior lumen to the exterior of the cannula, and wherein the electroactive polymer when in the first state is contained within the cannula and when in the second state

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extends outwards through the aperture.

20. (new) The system of claim 18, wherein the transducer comprises more than one pair of electrodes sandwiching the electroactive polymer.

21. (new) The system of claim 20, wherein the cannula has an aperture formed therein connecting the interior lumen to the exterior of the cannula, and wherein the electroactive polymer when in the first state is contained within the cannula and when in the second state extends outwards through the aperture.

22. (new) The system of claim 20, wherein the transducer comprises a frame affixed to the electroactive polymer.

23. (new) The system of claim 18, wherein the transducer comprises a frame affixed to the electroactive polymer.

24. (new) The system of claim 18, wherein the transducer is connected to the electrical power source by a cable.

25. (new) The system of claim 18, wherein the transducer is connected to the electrical power source by radio frequency energy.

26. (new, withdrawn) A method for creation of a cavity within cancellous bone, said method comprising the step of:

- (a) inserting a cannula having an interior lumen into the cancellous bone,
- (b) inserting via said cannula a transducer comprising an electroactive polymer sandwiched between a pair of electrodes, said electrodes being connected to an electrical power

source;

wherein the electroactive polymer exists in a first state having a first size and a first shape when no power is applied by the power source to the electrodes, said first size and shape allowing the transducer in the first state to fit within the interior lumen of the cannula;

wherein the electroactive polymer changes to a second state when power from the electrical power source is applied to the electroactive polymer, said second state having a second size and a second shape, and

wherein at least one of the second size and second shape are different from the first size and first shape in at least one dimension whereby when the transducer is disposed in cancellous bone when power is applied the cancellous bone is compressed to form a cavity in the cancellous bone;

(c) applying power to the electrodes from the electrical power source, whereby said electroactive polymer changes to the second state and the cancellous bone is compressed to form a cavity.

27. (new, withdrawn) The method of claim 26, wherein the cannula has an aperture formed therein connecting the interior lumen to the exterior of the cannula, and wherein the electroactive polymer when in the first state is contained within the cannula and when in the second state extends outwards through the aperture.

28. (new, withdrawn) The method of claim 26, wherein the transducer comprises more than one pair of electrodes sandwiching the electroactive polymer.

29. (new, withdrawn) The method of claim 28, wherein the cannula has an aperture formed therein connecting the interior lumen to the exterior of the cannula, and wherein the electroactive polymer when in the first state is contained within the cannula and when in the second state extends outwards through the aperture.

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30. (new, withdrawn) The method of claim 28, wherein the transducer comprises a frame affixed to the electroactive polymer.

31. (new, withdrawn) The method of claim 26, wherein the transducer comprises a frame affixed to the electroactive polymer.

32. (new, withdrawn) The method of claim 26, wherein the transducer is connected to the electrical power source by a cable.

33. (new, withdrawn) The method of claim 26, wherein the transducer is connected to the electrical power source by radio frequency energy.

34. (new, withdrawn) The method of claim 26, wherein the transducer is inserted with the cannula.

35. (new, withdrawn) The method of claim 26, wherein the transducer is inserted through the cannula.

36. (new, withdrawn) The method of claim 26, further comprising the step of withdrawing the cannula.

37. (new, withdrawn) The method of claim 37, wherein the transducer is left in the cancellous bone when the cannula is removed.

38. (new, withdrawn) The method of claim 26, wherein the cannula and transducer are inserted into cancellous bone of a vertebra.

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39. (new, withdrawn) The method of claim 38, further comprising the step of introducing bone cement into the cavity in the cancellous bone

40. (new, withdrawn) The method of claim 26, wherein the cannula and transducer are inserted into cancellous bone of a femur.